

**Testimony of  
Environment and Human Health, Inc.  
By  
David R. Brown Sc.D.  
Bill No. 6332**

**AN ACT CONCERNING TOXIC FIRE RETARDANTS IN CHILDREN'S  
PRODUCTS. --- RAISED BILL NO. 6332**

**Senator Dante Bartolomeo and Representative Diana Urban and Members of the  
Children's Committee:**

**ENVIRONMENT AND HUMAN HEALTH, INC. IS IN STRONG SUPPORT OF  
THIS IMPORTANT BILL**

My Name is David R. Brown, Sc.D I am a public Health Toxicologist with a career long interest in fetal and infant exposures to environmental chemicals during brain and physical development. First: It is virtually impossible to devise laboratory test protocols measure the toxic actions of foreign chemicals on the nervous systems during the stages of development. Yet experience with childhood lead and other organic chemical accidental exposures show that profound lifelong injuries can occur. Thus it is necessary to be vigilant when biologically active foreign chemicals are detected in children's blood and other body tissues.

Research suggests that chemicals used as flame-retardants build up in the bodies of people and wildlife. The concentrations of these chemicals in tissues appear to be approaching levels in American women that are capable of harming the developing nervous systems of fetuses, infants and children.

My first experience with the flame retardant referred to as "Tris" occurred in the 1970s when it was brought to my attention that the compound had been shown in the urine of children whose pajamas had been treated with the chemical "Tris" as a flame retardant. Soon after, other information came to light suggesting a mutagenic and possibly carcinogenic action. Clearly the chemical which had entered commerce lacked basic toxicity testing and it was entering children's bodies.

The continued introduction of agents with minimal testing into the home environments of children is the center of the problem. Parents assume that pretesting occurs when it does not. The history of "Tris" illustrates the extent of the hazards.

In 1977, The U.S. Consumer Product Safety Commission (CPSC) announced the ban of children's clothing containing the flame-retardant commonly known as Tris because it was carcinogenic. The pajama use of Tris was banned. But the CPSC action was too narrow and use continued, in fact increased, appearing in other baby products some made with polyurethane foam - such as nursing pillows, car-seats, crib mattresses, high-chairs, etc. No attention was given to the potential for human exposures from these new uses. But the exposures do occur through air emissions and physical contact.

The understanding of the health effects broadened. A study of California children found that prenatal and childhood exposures to flame retardant chemicals may lead to poorer attention, motor skills and IQ scores in children at ages 5 and 7. These findings add to the growing health concerns over flame retardant chemicals that are commonly found in U.S. homes.

This is the largest study to compare exposures to flame retardants with usage in children's products. It is also the most comprehensive study to evaluate both prenatal and postnatal flame retardant, PBDE, exposure in school-aged children. The results confirm findings from previous research that links PBDE exposure to neurodevelopmental effects in children.

Scientists who study human tissue body burdens saw chemical flame retardants build up in human bodies and the environment. The flame-retardants are as potent and long lasting as PCB's and DDT-chemicals, that began to accumulate in the environment and human tissues in the 1950's. Animal studies have shown that flame-retardants affect thyroid hormone functions and can impair the developing central nervous system and brain.

In 1999, Swedish researchers discovered much greater amounts in human breast milk than had been detected twenty-five years earlier. Subsequent studies have found an even sharper rise in U.S. women, leading some researchers to conclude that flame retardants levels in North Americans are 10 to 20 times higher than in Europeans and are doubling at a rate of every four to six years.

Flame retardants found in the cord blood of infants when they are born show that these chemicals cross the placenta and get into the fetus. Infants are exposed to flame-retardants through breast milk. Children take in flame-retardants from many sources and these will persist in their bodies through adulthood. Researchers say the effects on children are likely to be subtle - not mental retardation or disability, but there are measurable changes in children's intelligence, memory hyperactivity and hearing.

Dr. Linda Birnbaum, the EPA's director of toxicology, said, "**there is no question that the chemicals are altering thyroid hormones.** Altering thyroid hormones during fetal development can affect how the brain functions." "We're concerned about learning and memory and some behavioral effects and hearing loss," Birnbaum said.

Some flame-retardants have striking similarities to PCB's which were widely used as insulating fluids in electrical transformers until they were banned in the 1970's because they were collecting in the tissues of people. This historic connection further adds to the need for caution.

Reducing safety risks from fires is in-itself necessary but the effort needs to consider the means used, and monitor the potential for unforeseen hazards. That clearly is not happening. In the United States there has been no comprehensive action to regulate flame-retardants in a way that considers the human health implications of the absorption of the chemicals by children and adults. Instead the use continues to rise. About half of the 135 million pounds of flame-retardants used worldwide in 2001 were applied to products in North America.

Given the real difficulty of instituting a national or industry wide precautionary logic that considers both the safety aspects and human exposure aspects of flame retardant use. Connecticut has the obligation to institute actions that protect our youngest and most vulnerable children from ingestion of toxic chemicals such as "Tris".

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